

1 1 (Original). A method of making a low-loss electromagnetic wave resonator structure
2 comprising:

3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said
5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and

8 specifically configuring said resonator structure to reduce or eliminate radiation loss
9 from said resonant mode into at least one of said radiation channels, while keeping the
10 characteristics of the near-field pattern substantially unchanged.

1 2 (Original). The method of claim 1, wherein said step of configuring comprises a
2 modification of said far-field pattern.

1 3 (Original). The method of claim 1, wherein said step of configuring comprises a
2 modification of the geometry or refractive index of said confining device.

1 4 (Original). The method of claim 3, wherein said modification has at least one plane
2 of symmetry.

1 5 (Original). The method of claim 3, wherein said modification has no plane of
2 symmetry.

1 6 (Original). The method of claim 1, wherein said step of configuring comprises an
2 introduction of at least one nodal plane into said far-field pattern.

1 7 (Original). The method of claim 1, wherein said confining device operates using
2 index confinement effects, photonic crystal band gap effects, or a combination of both.

1 8 (Original). The method of claim 1, wherein said surrounding medium is
2 homogeneous.

1 9 (Original). The method of claim 1, wherein said surrounding medium is
2 inhomogeneous.

1 10 (Original). The method of claim 1, wherein said radiation channels comprise
2 superpositions of at least one spherical wave.

1 11 (Original). The method of claim 1, wherein said radiation channels comprise
2 superpositions of at least one cylindrical wave.

1 12 (Original). The method of claim 1, wherein said confining device comprises a
2 waveguide with a grating where said grating contains at least one defect.

1 13 (Original). The method of claim 12, wherein said step of configuring comprises
2 modifying the dielectric constant of the grating.

1 14 (Original). The method of claim 12, wherein said step of configuring comprises
2 modification of the local phase shift.

1 15 (Original). The method of claim 1, wherein said confining device comprises a
2 waveguide microcavity.

1 16 (Original). The method of claim 1, wherein said confining device comprises a
2 photonic crystal slab.

1 17 (Original). The method of claim 1, wherein said confining device comprises a disk
2 resonator.

1 18 (Original). The method of claim 1, wherein said confining device comprises a ring
2 resonator.

1 19 (Original). A method of making a low-loss electromagnetic wave resonator
2 structure comprising:
3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said
5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and
8 specifically configuring said resonator structure to increase radiation loss from said
9 resonant mode into at least one of said radiation channels, while keeping the characteristics of
10 the near-field pattern substantially unchanged.

1 20 (Original). The method of claim 19, wherein said radiation channel comprises of
2 one or more spatial directions.

1 21 (Original). A method of making a low-loss acoustic wave resonator structure
2 comprising:

3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said
5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and

8 specifically configuring said resonator structure to reduce or eliminate radiation loss
9 from said resonant mode into at least one of said radiation channels, while keeping the
10 characteristics of the near-field pattern substantially unchanged.

1 22 (Original). A method of designing a low-loss electronic wave resonator structure
2 comprising:

3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said
5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and

8 specifically configuring said resonator structure to reduce or eliminate radiation loss
9 from said resonant mode into at least one of said radiation channels, while keeping the
10 characteristics of the near-field pattern substantially unchanged.

1 23 (Original). A method of making a low-loss acoustic wave resonator structure
2 comprising:

3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said

5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and

8 specifically configuring said resonator structure to increase radiation loss from said
9 resonant mode into at least one of said radiation channels, while keeping the characteristics of
10 the near-field pattern substantially unchanged.

1 24 (Original). The method of claim 23, wherein said radiation channel comprises of one
2 or more spatial directions.

1 25 (Original). A method of making a low-loss electronic wave resonator structure
2 comprising:

3 providing a resonator structure, said resonator structure including a confining device
4 and a surrounding medium, said resonator structure supporting at least one resonant mode, said
5 resonant mode displaying a near-field pattern in the vicinity of said confining device and a far-
6 field radiation pattern away from said confining device, said surrounding medium supporting at
7 least one radiation channel into which said resonant mode can couple; and

8 specifically configuring said resonator structure to increase radiation loss from said
9 resonant mode into at least one of said radiation channels, while keeping the characteristics of
10 the near-field pattern substantially unchanged.

1 26 (Original). The method of claim 25, wherein said radiation channel comprises of
2 one or more spatial directions.